

Defeating a Deadly DISEASE

One teen's quest to beat cancer increases the chances that minorities can receive a lifesaving treatment

Two years ago, Steven Gonzalez was like any 12-year-old boy. He played roller hockey, was a Boy Scout, and had just started at a new middle school. But his life was about to change. Increasingly, Steven began feeling sick to his stomach and while on a camping trip he woke up with pinhead-size red spots on his face. That prompted his parents to take him to the emergency room.

After a battery of blood tests,

Steven was diagnosed with *leukemia*. This type of cancer causes abnormal cells in a person's *bone marrow* (spongy tissue inside bones where blood cells are made) to grow and divide uncontrollably. Steven had a rare and aggressive form of leukemia, with only a 2-percent survival rate.

"It felt like the end of the world, but we didn't give up hope," says Steven's mom, Rosie. There was one medical treatment that could save Steven's life: a *bone marrow transplant*. This procedure would replace Steven's unhealthy bone marrow cells with healthy cells from a donor.

Steven's best bet for a transplant would come from someone of His-

panic and Native American descent like himself. When his family learned there was a shortage of registered bone marrow donors from these minority groups, they worked to boost their numbers. Their efforts improved the chance that Steven and others like him would find a cure.

BEGINNING BATTLE

Each year, about 2,000 kids are diagnosed with leukemia. The disease causes a person's body to pump out underdeveloped *white blood cells*. Because these cells are defective, they are unable to fight off infections as part of the body's *immune system*. The abnormal cells also crowd out

ROAD TO RECOVERY:

Steven peddled 105 kilometers (65 miles) on his hospital exercise bike. Doctors think this helped him recover in record time.

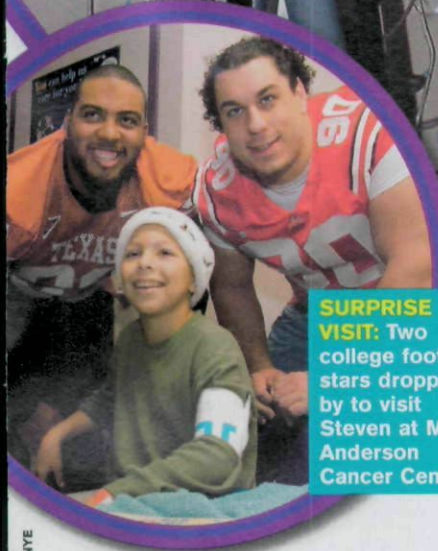


webextra

The Children's Organ Transplant Association helped Steven raise funds for his bone marrow drives and transplant-related expenses. To learn more, visit: www.cota.org

SURPRISE VISIT:

Two college football stars dropped by to visit Steven at M.D. Anderson Cancer Center.



red blood cells (oxygen-carrying cells) and platelets (factors that allow the blood to clot).

To halt the spread of Steven's leukemia, doctors at M.D. Anderson Cancer Center in Houston, Texas, started him on a regimen of chemotherapy. While these drugs kill cancerous cells, many have harsh side effects. "I felt nauseous almost 24/7 and went from having lots of hair

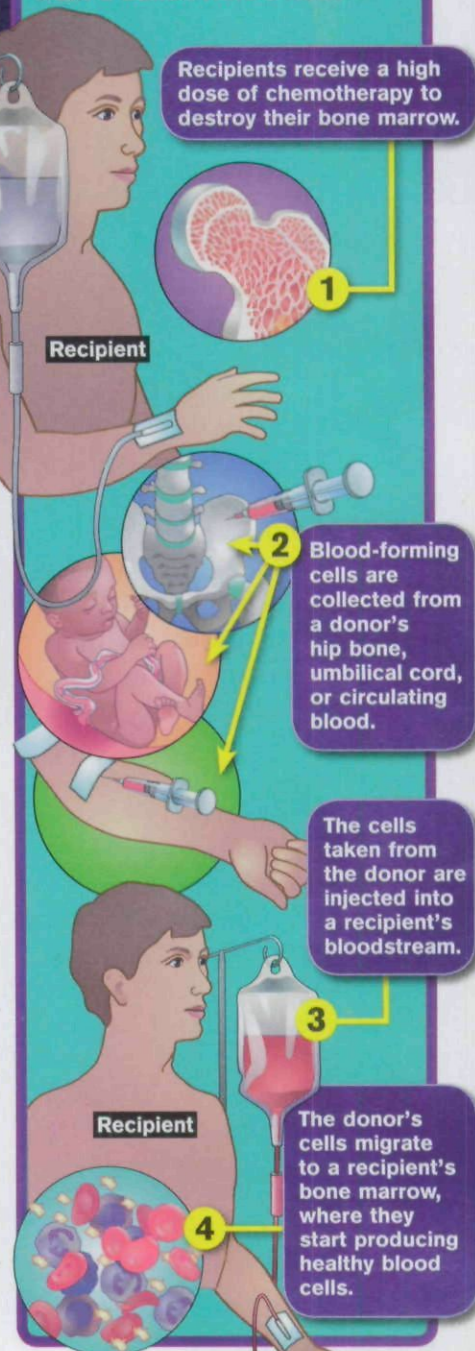
to no hair at all," says Steven (see "Haircuts for a Cause," p. 14).

After several rounds of the drugs and weeks in the hospital, Steven's cancer went into *remission* (period without signs of cancer). His doctors could then begin the process of replacing his bone marrow. The transplant would require Steven to receive a whopping dose of chemo to wipe out his diseased marrow (see *Nuts & Bolts*, right). Next, doctors would introduce healthy blood-forming cells collected from a donor into Steven's blood. These cells would migrate to Steven's bones, where they would start producing new blood cells.

nuts&bolts

STEPS TO A CURE

For some types of cancer of the blood, a bone marrow transplant is the only treatment option. The procedure replaces a patient's unhealthy blood-forming cells with healthy cells from a donor. Here's how:





CANCER SURVIVOR: Many bone marrow drives (inset) were held to find a donor for Steven. After a successful transplant, Steven is back doing the things he loves.

just 650,000 are Hispanic. The low figure can make it hard for some people to find even a single match, says Dr. Navarro.

BEATING THE ODDS

Determined to find a donor for Steven, his family organized bone marrow drives across the country. "Their efforts added more than 400 new donors to the regis-

try," says Rick Lofgren, the president of the Children's Organ Transplant Association, a nonprofit group that aids patients' families in raising funds for transplants. But Steven couldn't wait any longer for the procedure, so his doctors decided to try something different—a *cord-blood transplant*.

After a baby is born, its *umbilical cord* (tube that carries nutrients between a mother and unborn child) is removed. Parents can donate their baby's cord, which contains a small amount of blood rich in cells that build bone marrow. It opens up new possibilities for people with uncommon tissue types because cord blood's immature cells do not have to match as closely with a recipient's, says Dr. Navarro. A cord-blood search turned up two good candidates for Steven, and on February 13, 2007, he received his transplant.

Steven, now 14, has been cancer-free for 23 months and is happy to feel like a regular kid again. He has discovered a love of snowboarding, is back camping with his Scout troop, and is considering a future career as a video-game designer. "After everything I went through, I try to live my life to the fullest," he says.

Partly in thanks to Steven's family's push to increase diversity among bone marrow registrants, Steven's hometown of Houston has experienced a huge jump in Hispanic donors. A recent search conducted by the M.D. Anderson Cancer Center revealed that Steven now has 10 possible donors on the registry. That means other minorities also will have a greater likelihood of getting a lifesaving transplant. "It feels like I've helped make a difference," says Steven. ❀ —Cody Crane

MATCHMAKER

For the bone marrow transplant to be a success, Steven and his donor would need to carry a similar set of markers called *human leukocyte antigens* (HLAs) on the surface of their white blood cells. These markers allow the immune system to distinguish between cells that belong in the body from foreign intruders.

"Finding a donor is kind of like winning the lottery; you need to match all the numbers," says Dr. Willis Navarro, the medical director for transplant services at the National Marrow Donor Program (NMDP). If Steven's and his donor's tissue types were not compatible, his new bone marrow might attack his body.

Since HLA markers are inherited, Steven's greatest chance for a match would come from a family member or from an unrelated donor of the same ethnicity. Steven's mom, dad, and sister were tested as potential donors, with no luck. His doctors also searched the NMDP's registry, a list of people who have signed up to be donors, and still came up empty-handed. "There is a big problem finding donors for ethnic minorities," says Dr. Navarro. Out of the registry's 7 million potential donors,

HAIRCUTS FOR A CAUSE

When Steven's younger sister Sabrina found out she wasn't a match to donate bone marrow to her brother, she looked for other ways to help. She raised money, helped organize a blood drive at her school, and even cut off 25.4 centimeters (10 inches) of her hair for the charity Locks of Love. The organization turns the chopped tresses into natural-looking wigs for children who have lost their hair due to treatment for cancer or other medical conditions. Sabrina was happy to make the cut, says her mom, Rosie. "She fell in love with her new look and has decided to keep her hair short." Find out more about the program at www.locksoflove.org.



COURTESY THE GONZALEZ FAMILY (2)

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